

In the Claims

1. (Original) A plasma torch assembly comprising:
a torch body having a handle portion and a tip portion;
an electrode disposed in the tip portion of the torch body; and
a retaining cup constructed to encircle the electrode in the torch body and connect to the tip portion with less than approximately 180 degrees rotation relative to the torch body.
2. (Original) The plasma torch assembly of claim 1 further comprising an L-shaped groove formed in at least one of the retaining cup and the tip portion of the torch body.
3. (Original) The plasma torch assembly of claim 2 further comprising a pin extending from at least one of the retaining cup and the tip portion of the torch body and constructed to engage the groove.
4. (Original) The plasma torch assembly of claim 1 further comprising a shield connectable to the retaining cup generally opposite the tip portion of the torch body.
5. (Original) The plasma torch assembly of claim 4 wherein the shield is at least one of a drag shield and a gouging shield.
6. (Original) The plasma torch assembly of claim 1 further comprising a swirl ring disposed generally between the electrode and the tip portion of the torch body.
7. (Original) The plasma torch assembly of claim 1 wherein the retaining cup is fully connectable to the tip portion of the torch body by approximately 90 degrees of rotation therebetween.
8. (Original) The plasma torch assembly of claim 1 wherein the plasma torch assembly is any one of a contact start plasma torch, a high-frequency start plasma torch assembly, and a high voltage start plasma torch assembly.

9. (Original) The plasma torch assembly of claim 1 further comprising a cable having a first end connected to the plasma torch assembly and a second end connectable to a power source.

10. (Original) A plasma cutter comprising:
a power source configured to condition power into a form usable by a plasma cutting process;
a torch connected to the power source and configured to effectuate the plasma cutting process;
an electrode disposed in the torch; and
a cup having a twist-lock quick-connect mechanism removably connecting the cup to the torch and constructed to maintain an operable position of the electrode and prevent overtightening of the cup to the torch.

11. (Original) The plasma cutter of claim 10 further comprising a pin and channel engagement between the cup and torch constructed to limit rotation therebetween to less than approximately 360 degrees.

12. (Original) The plasma cutter of claim 10 further comprising a swirl-ring disposed between the electrode and the torch and constructed to direct a flow of gas therethrough.

13. (Original) The plasma cutter of claim 10 further comprising a shield connected to the cup.

14. (Original) The plasma cutter of claim 10 wherein the twist-lock mechanism is constructed to provide complete engagement within a single-grip rotation.

15. (Original) The plasma cutter of claim 10 further comprising a pin extending from one of the cup and the torch and constructed to engage a groove formed in another of the cup and the torch.

16. (Original) The plasma cutter of claim 10 wherein the torch is one of a contact start torch, a high-frequency start torch, and a high-voltage start torch.

17. (Original) A plasma torch assembly comprising:
a torch body;
an electrode;
means for connecting the electrode to the torch body having a fully engaged position with less than one complete rotation of the means from an unlock position to a lock position.

18. (Original) The plasma torch assembly of claim 17 wherein the fully engaged position of the connecting means is approximately 90 radial degrees from the initial position.

19. (Original) The plasma torch assembly of claim 17 wherein at least one of the torch body and the connecting means includes a groove constructed to engage a pin on another of the torch body and the connecting means.

20. (Original) The plasma torch assembly of claim 19 wherein the pin and groove cooperate to prevent overtightening of the connecting means to the torch body.

21. (Original) The plasma torch assembly of claim 17 further comprising a cable connecting the plasma torch assembly to a power source configured to generate a power signal applicable to a plasma process.

22. (Original) A plasma torch consumable comprising a quick connect cup having a partial-turn engagement mechanism engageable with another engagement mechanism of a plasma torch.

23. (Original) The plasma torch consumable of claim 22 wherein the partial-turn engagement mechanism of the quick connect cup is a twist-lock mechanism.

24. (Original) The plasma torch consumable of claim 23 wherein the twist-lock mechanism is one of a DINSE-style connector and includes a pin and groove engagement.

25. (Original) The plasma torch consumable of claim 23 wherein the twist-lock mechanism prevents overtightening of the quick connect cup to the torch.

26. (Original) The plasma torch consumable of claim 22 wherein the partial turn engagement mechanism is defined to have a rotation less than 360 degrees when moved from a disengaged position to an engaged position.

27. (Original) The plasma torch consumable of claim 22 wherein the partial turn engagement mechanism is a half-turn engagement mechanism wherein rotation of the quick connect cup relative to the plasma torch fully connects the quick connect cup thereto.

28. (Original) The plasma torch consumable of claim 22 wherein the partial-turn engagement mechanism includes one of a groove and a pin and another engagement mechanism is another one of a groove and pin.

29. (Original) The plasma torch consumable of claim 22 wherein the partial-turn engagement mechanism includes a thread on each of the quick connect cup and the torch having a stop mechanism preventing rotation past a partial turn of the cup with respect to the torch.